

<b>Brookhaven National Laboratory</b> <b>National Synchrotron Light Source</b>		<b>Number:</b> LS-ESH-0021	<b>Revision:</b> A
		<b>Effective:</b> 03/06/00	<b>Page 1 of 2</b>
<b>Subject: Biosafety Level 2 work at the NSLS/ A Technical Basis</b>			
<b>Prepared By:</b> A. Ackerman	<b>Approved By:</b> W. R Casey	<b>Approved By:</b>	

\*Approval signatures on file with master copy.

[Revision/Review Log](#)

Experiments involving work with biological materials are common at the NSLS. Most of this work centers on the study of individual proteins or nucleic acids that present no risk to personnel, but a few have involved biohazardous samples. These experiments are identified through the NSLS Environment, Safety, and Health (ES&H) Experimental Review program and specific requirements to control the risks associated with this work have been developed.

The following references were reviewed to define the level of biohazard work that could proceed at the NSLS beam lines and to define the work practices, engineering controls, and personal protective equipment needed to minimize the risks presented.

American Industrial Hygiene Association – **Biosafety Reference Manual**. Heinsohn P.A.; Jacobs R.R.; Concobby B.A. (eds.) American Industrial Hygiene Association, Fairfax, 1995.

US Department of Health and Human Services, Centers for Disease Control and Prevention (CDC), National Institute of Health (NIH) – **Biosafety in Microbiology and Biomedical Laboratories**; Fourth Edition. Richmond J.Y.; McKinney R.W. (eds.) US Government Printing Office, Washington, 1999

Review of the requirements contained in the publications referenced above and analysis of the procedures required for working with samples at the beam lines indicates that work with biohazardous agents assigned, by the CDC, to BSL-1 or BSL-2 is acceptable.

An outline of the technical basis for work with BSL-2 agents on the NSLS experimental floor follows.

- Access to the NSLS experimental floor is controlled through use of a card reader security system. Only authorized and trained personnel have encoded identification cards that allow entry to the floor.
- Hand washing and eye wash facilities are available in our set up laboratories and on the experimental floor.
- Spill control materials are available.
- Bench tops are made of impermeable chemical resistant material and are accessible for cleaning.
- Disinfectants are available and used routinely.
- Researchers have adequate training and experience for work with BSL-2 agents.
- Work areas are posted and secondary containment trays and adsorbent pads are used as necessary.
- All experiments are subject to a documented ES&H review before work begins.

<b>Number:</b> LS-ESH-0021	<b>Revision:</b> A	<b>Effective:</b> 03/06/00	<b>Page 2 of 2</b>
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- Written procedures for work with BSL-2 agents are required. The procedures must outline the work protocols and requirements for, disinfection, posting, personal protection equipment, sample transport, and emergency response.
- Researchers are required to wear laboratory coats, gloves, and eye protection.
- All BSL-2 samples are under the constant supervision and control of the researchers. Samples are never left unattended.
- Needles and other sharp instruments are disposed in commercial biohazard sharp containers that are brought to the BNL Medical Department for proper disposal.
- Procedures that have the potential for aerosol generation are forbidden.

The CDC guidelines indicate the need for an insect and rodent control program for laboratories working with BSL-2 agents. Since there is no storage of BSL-2 agents at the NSLS and samples are always attended, establishing an Integrated Pest Management Program, as described in the guidelines, is not necessary. Careful inventory control and constant attendance of the samples is adequate to control the risk of dispersal or loss of containment from rodent or insect activity for the samples under study at the NSLS.

The NSLS experimental floor is a shared facility. There are often researchers working adjacent to BSL-2 work who are not involved in that project and so may not be aware of the concerns presented. To address this concern, BSL-2 work is contained to a limited area, the area is posted and always attended by a researcher involved in the project who can answer questions and assure that personnel are alerted to any issues that arise.

In summary, although the NSLS beam lines are not typical of laboratories working with biohazardous materials, controls are in place that provide adequate protection for work with BSL-1 and BSL-2 agents.